Stock Price Effects of Bank Rating Announcements: An application to EU countries[1]

Abstract

This paper uses daily stock prices data surrounding credit rating announcement dates to examine abnormal returns of stocks of the European Union banks experiencing debt rating announcements, during the period 2004-2015. The results of the event studies suggest that rating agencies, by issuing downgrades and upgrades, provide relevant information to capital markets. The results also indicate that rating agencies contribute to enhance the transparency and efficiency in capital markets by standardizing information for all investors. The large positive pre-upgrade returns we observe are consistent with the view that upgrades are of most interest to market investors. There is no significant evidence of abnormal returns on announcements of rating watches.

Keywords: credit ratings, banks, stock market, market efficiency, event study.

JEL-Codes: G1; G14.

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1. Introduction

This paper uses daily stock prices data surrounding rating announcement dates to examine abnormal returns of stocks of the European Union (EU) banks experiencing debt rating announcements in the period 2004-2015. It is a contribution for the debate about the information content of bank debt ratings in the stock market perspective.

There are three main motivations for conducting this study. First, there is a widespread perception that the financial community closely follows the opinions of rating agencies. The study of investors' reaction to the recommendations of the rating agencies is a test of the role that these agencies play in the setting of these market participants' expectations. Second, when these ratings are incorrectly assigned all the economy is affected. Following this reasoning, rating agencies were criticised after the banking collapse in 2008 for misrating financial products, contributing to the severity of the collapse (Financial Crisis Inquiry Commission, 2011). This leads to the third motivation, because although a vast literature has already been dedicated to the role of the rating agencies and their impact on financial markets the debate on their responsibility during the recent financial crisis suggests that they are still a controversial topic. In this sense, testing the reaction to the opinions issued by the rating agencies is of paramount importance insofar as it also constitutes an examination of the social utility of that industry.

Previous research on the information content of rating announcements has produced incomplete results. Research for United States (US) firms generally suggests that bad news negatively impacts prices in the short-term, while there is no significant market reaction to good news (e.g., Holthausen and Leftwich, 1986; Goh and Ederington, 1993). There is limited evidence that in a non-US market there is more significant positive reaction to good news (e.g., Gropp and Richards, 2001). In part, this is because outside the US there are few similar studies about rating change announcements. This is not surprising, since the penetration of ratings in Europe is historically lower than in the US (Dale and Thomas, 2001). The role of rating watches has also received little study, as compared to rating changes, either in the US or in Europe.

Besides, as argued by Schweitzer *et al.* (1992), there are reasons to think that rating changes might have a lower impact on banks, as highly regulated entities, as compared to non-financial companies. They say that the regulation of an industry may increase the amount of information available to the market. Furthermore, there are also few similar studies using a sample period during the recent financial crisis and analysing a sample of banks.

This paper is primarily motivated by the question: Are bank debt rating changes associated with valuable information content events to the stock market in the EU context? In light of previous research, it is argued that the existence of abnormal returns on the announcement date of a rating is evidence that agencies provide some information not already incorporated into prices. The following questions are also investigated: Are these announcements anticipated? Are there any post-announcement effects associated with them? Do rating watch announcements provide new information to the stock market?

This paper is structured as follows. The next section reviews the relevant literature. Section 3 presents the data and the methodology. Section 4 presents the empirical results concerning the effect of rating changes and rating watch changes on stock returns. Section 5 concludes the paper.

2. Literature Review

2.1 Rating change announcements

Concerning the empirical research about the impact of credit rating change announcements on security prices there are some complementary theories related to the information content value of ratings and to the wealth redistribution between bondholders and stockholders.

Moreover, there are two alternative views of the information content value of ratings produced by rating agencies. One view is defended by Weinstein (1977), among others, who find no evidence of a price response to rating changes. They argue that rating agencies only have access to publicly available information so, capital markets are efficient in semi-strong form and debt ratings should not affect market prices. Nevertheless, most literature is inconsistent with this evidence. The other view, defended and empirically validated by Holthausen and Leftwich (1986), Hand *et al.*

(1992), Schweitzer *et al*. (1992) and Gropp and Richards (2001), among others, is that rating agencies have considerable non-public information about a company, and thus a credit rating change may provide new information to the market and should affect security prices, with the stock price of downgraded (upgraded) firms declining (increasing). Proponents of this view argue that the main role of credit ratings is to enhance transparency and efficiency in debt capital markets by standardizing information for all investors and reducing the information asymmetry between borrowers and lenders, enhancing investor confidence and allowing borrowers to have broader access to funds thus helping to lower the aggregate costs of borrowing and lending (McDaniel, 2002).

The theory about the wealth redistribution between bondholders and stockholders (Goh and Ederington, 1993) focuses on the conflict of interests between them by taking into account the reason for the rating change. On one hand, if stockholders increase the expected return on a firm by taking on riskier investments (strategy that increases the default risk of outstanding bonds) and because of this the firm is downgraded, this downgrade should be good (bad) news for stockholders (bondholders) leading to a stock (bond) price increase (decrease). On the other hand, if a downgrade reflects new negative information about firm's earnings or sales, this downgrade should be bad news for bondholders and stockholders leading to stock and bond price decreases.

Previous research, mostly using samples of US firms, tends to conclude to a lack of significant impact on stock returns in case of upgrades, suggesting no information content (Holthausen and Leftwich, 1986; Goh and Ederington, 1993). In case of downgrades, the empirical literature, such as Holthausen and Leftwich (1986) and Jorion and Zhang (2007), often reports economically large and significant effects on daily stock returns. With a sample of US companies, Dichev and Piotroski (2001) find negative abnormal returns in the first year following downgrades and this underperformance is especially pronounced for small, low-credit-quality firms, where there is a greater potential for informational inefficiencies.

Regarding the literature of the impact of bank ratings, as argued by Schweitzer *et al*. (1992), there are reasons to think that rating changes might have a lower impact on banks, as highly regulated entities, as compared to non-financial companies. They say that the regulation of an industry may increase the amount of information available to the market. Using a sample of US bank holding companies their findings suggest that rating agencies provide valuable information to the market through downgrades and that market reactions to the ratings of banks are not reduced relative to those for unregulated industrial firms. However, Wansley and Dhillon (1989) and Polonchek *et al*. (1989) find that the announcement effect of new security issues is smaller for banks than for industrial firms. Billet *et al*. (1998), in a sample of US bank holding companies, also confirm the negative announcement effect of downgrades. Further, they argue that the share of insured deposits is an important variable in explaining abnormal returns following downgrades and conclude that banks can shield themselves from the full costs of market discipline through increases in insured deposits. Richards and Deddouch (2003), in a sample of emerging market banks, find insignificant abnormal returns of expected sign, either for downgrades and upgrades, in the announcement window and significant negative abnormal returns before downgrades, suggesting anticipation by investors.

Gropp and Richards (2001) focus on the informational relevance of European bank ratings, finding small announcement effects on bond prices, which they attribute to the lack of liquidity in bond markets in Europe during their sample period (1989-2000). For stock prices, they find that downgrades are associated with positive abnormal returns of up to 6%, if an increase in risk rather than a deterioration of earnings caused the downgrade. For downgrades associated with a deterioration of earnings prospects, they find significant negative abnormal returns. They also find an absence of pre-announcement effects for both downgrades and upgrades, interpreting it as evidence that there is news in the rating announcement that was not already in the public domain.

Recently, Alsakka *et al*. (2015), analysing the effect of bank rating actions on European banks' stock returns and volatility during 2008-2013, conclude that S&P and Moody's downgrades lead to stronger negative abnormal returns after a regulatory change for credit rating agencies introduced in 2011. According to the authors, the regulatory change has reduced the negative abnormal returns reported following bank rating downgrades by Fitch prior to July 2011. However, other recent empirical studies are mostly focused on the linkages between banks and sovereign ratings. Caporale *et al*. (2011) find that country-specific factors affect European Union countries' bank ratings. Shen *et al*. (2012) find that larger bank assets and higher sovereign credit ratings affect significantly bank credit ratings. Hau *et al*. (2013) find that rating agencies tend to assign higher ratings to large banks and to those banks that provide them with substantial securitization business. Correa *et al*. (2014) find that sovereign rating downgrades have larger impact on bank stock returns for those banks that are expected to receive stronger support from their governments. Finally, Alsakka *et al*. (2014) show that sovereign rating actions have strong effects on bank rating downgrades in Europe during the recent crisis.

2.2 Rating watch announcements

Wansley and Clauretie (1985), Holthausen and Leftwich (1986), Hand *et al*. (1992), Alsakka and Gwilym (2012), Chung *et al*. (2012), among others, find that credit watches announcements are significant information events. Holthausen and Leftwich (1986) find that significant negative abnormal returns are associated with negative rating watches and positive abnormal returns are associated with positive rating watches. Barron *et al*. (1997) also find evidence of significantly positive abnormal returns for positive rating watches using UK data. Hand *et al*. (1992) classify rating watches as either expected or unexpected: if prior bond yields did not vary significantly from a peer group of bond yields with the same rating, they code this observation as an unexpected addition. They find a significant negative reaction to unexpected negative rating watches. However, positive rating watches are associated with insignificant positive returns. Elayan *et al*. (1990) examine false signals related to rating watch announcements that subsequently result in a rating change in the opposite direction. According to them, when a negative rating watch is followed by either an affirmation or an upgrade, a significantly negative market response is detected at the time of the rating watch announcement. When a positive rating watch is followed by either an affirmation or a downgrade, an insignificant market response is detected at the time of the rating watch announcement.

For a sample of US firms during the period 1992-2010, Chung *et al*. (2012) show that rating watch actions have different underlying causes, evidencing that rating watches are significant information events. According to them, a high percentage (59.1%) of rating watch actions in their sample are caused by specific events, such as mergers, acquisitions and restructurings. Negative and positive watches are associated with mean cumulative abnormal returns of -1.1% and 4%, respectively. Chung *et al.* (2012) suggest that the information content of positive watches is smaller for larger issuers and is stronger for investment grade issuers and when the watch is followed by a multi-notch rating change. They also suggest that the negative effect of negative watches on stock returns is smaller for investment grade issuers and that the market reaction to a credit watch is related to the eventual outcome of the watch.

In contrast, Boot *et al*. (2006) argue that all market participants can observe a change in credit quality (expected event), and only if a public signal about credit quality deterioration and the announcement of a negative rating watch occur simultaneously we should observe a negative market reaction.

In general, despite the fact that the literature is contradictory in some aspects, it provides suggestions which contribute to the present study.

3. Data and Methods

3.1 Sample and descriptive statistics

a) Rating changes

The sample consists of 399 rating changes by Moody's and Fitch, involving a total of 50 European banks from 14 European Union members (EU-15 excluding Luxembourg), over the period 2004-2015. The identity of the bank and the date of the rating change were obtained from the Bankscope database. The events were restricted to rating changes for long-term debt. The 399 rating changes include 325 downgrades and 74 upgrades. The stock prices were obtained through Thomson Reuters Datastream.

The sample size is greater than the reported in similar literature about the banking industry. For example, Richards and Deddouche (2003) use 219 rating changes, Gropp and Richards (2001) use 162 and Schweitzer *et al*. (1992) employ only 95.

Table 1 gives an overview of the sample by country. The countries most widely represented are Spain, Italy, Denmark, Greece and the United Kingdom with 5 to 7 banks. Regarding the countries with higher number of downgrades, Greece, Spain and

Italy represent around 21.8%, 17.5% and 12% of the total sample, respectively. Spain and Greece are also the countries with higher number of upgrades, around 18.9% and 13.5% of the total sample, followed by the United Kingdom with 12.2% of the upgrades.

The sample is relatively balanced with regards to its composition by rating agency, with Moody's and Fitch covering, respectively, downgrade events with a proportion of 60% (195/325) and 40% (130/325), and upgrade events with a proportion of 65% (48/74) and 35% (26/74).

Analyzing by year, until 2008, the percentage of downgrades in the total sample is almost zero each year. In 2008, it is around 4.3% and between 2009 and 2012, it is around 15.4% and 21.5% each year, hitting the highest figure in 2011. Then, this percentage presents lower values, reaching 9.2% in 2015. Analyzing the upgrades by year, we draw conclusions in an opposite direction. In other words, in 2004, 2006 and 2007 the percentage of annual upgrades in the total sample is around 15%. Between 2008 and 2012, this percentage decreases, reaching 1.4% in 2008 and zero in 2012. Then, it starts increasing again, from around 9.5% in 2013 until 32.4% in 2015. Obviously, the behaviour of the rating changes by year reflects the unfolding of the European financial and sovereign debt crises initiated in 2009.

In light of previous literature, for each observation in the sample, concurrent information releases were identified by searching on the *Financial Times* for news about each bank appearing during the five trading days, day -2 to day +2, where day 0 is the rating change date. If there was information from a source other than the rating agency the observation was classified as contaminated, whereas the remaining observations were classified as uncontaminated. The lower part of Table 1 presents the results of this classification. The contaminated and uncontaminated downgrades yield a sample of 86 and 239 observations, respectively, whereas for upgrades there are 11 and 63 observations, respectively.

INSERT TABLE 1 HERE

Following Holthausen and Leftwich (1986), rating changes were also classified according to whether they are within rating class (if the change occurs within any of the three gradations for a given class, e.g., Aa1/AA+ to Aa2/AA or Aa3/AA-) or across rating classes (e.g., if it changes from Aa3/AA- to A1/A+). In the sample, the across and within class downgrades are 52% and 48% of the full sample downgrades, respectively, whereas the across and within class upgrades are, respectively, 46% and 54%, of the full sample upgrades. Additionally, downgrades which move bank debt from investment to speculative status represent 9% of the full sample downgrades and upgrades which move bank debt from speculative to investment status represent 7% of the full sample upgrades. Concerning the number of rating grades changed by upgrade and downgrade, 65% of the changes moved debt up/down just 1 grade of the rating scale, whereas 26% moved debt up/down 2 grades and only 8% moved debt up/down 3 grades.

b) Credit Watch Announcements

Boot *et al*. (2006) suggest that rating agencies issue negative watches to give the firm a chance to remedy the credit deterioration, thus potentially avoiding a credit downgrade. A negative (positive) rating watch indicates the possibility of the issuer/ issue being downgraded (upgraded) in the short-term. Despite their importance, the role of rating watches has received little study, when compared to rating changes. Taking this into account, we provide empirical evidence concerning the impact of rating watches on stock prices using a sample of rating watch announcements which contains 231 observations by Moody's and Fitch, involving a total of 49 European banks from the same previous 14 European Union members, over the 2008-2015 period. Table 2 provides descriptive evidence of negative and positive rating watches by year, where the 231 rating watches include 211 negative rating watches and 20 positive rating watches.

From 2004 to 2008, we do not found either negative or positive rating watches on Bankscope database. The period 2011-2012 and the year 2015 are the ones that are associated with higher percentage of negative rating watches (for instance, in 2011 were announced 37% of the negative rating watches of our sample). Regarding the positive rating watches, 95% of them were announced in 2015.

This sample size is in line with those reported in similar literature. In Holthausen and Leftwich (1986) the estimation is performed with 256 rating watches, in Hand *et al.*

(1992) with 250. Nevertheless, Chung *et al*. (2012) yields a larger sample of 2990 rating actions.

Similarly to the previous section, observations were classified as contaminated or uncontaminated. The lower part of Table 2 summarizes the results of this procedure, where 152 of 231 rating watch announcements are negative and uncontaminated, 59 are negative and contaminated and 20 are positive and uncontaminated.

INSERT TABLE 2 HERE

3.2 Methodology

This study employs the event study methodology with the underlying assumption that capital markets are semi-strong form efficient.

The null hypothesis being tested on the information content of bank debt ratings concerning the effects of rating changes on bank stock prices is the following:

> *Debt ratings have no informational value (average abnormal returns on the announcement date of a rating equal to zero).*

The stock price impact of rating change announcements is estimated using prediction errors (abnormal returns) from the single-index market model from Fama (1976). The daily abnormal return, AR_{it}, for each sample rating change event i on each event day t during the period of interest is estimated as

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{m_c t}) \qquad (1)$$

where, R_{it} is the continuously compounded rate of return on the common stock of bank experiencing the event i on event date t; $R_{m_c t}$ is the continuously compounded rate of return on the all share value-weighted benchmark index m of the bank's domestic country c, on event date t; $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least squares (OLS) estimates of the market model parameters. Parameters are estimated over the day +61 to day +320, since previous studies indicate that downgrades tend to occur after bad news and when the firm's stock has been performing worse (Holthausen and Leftwich, 1986; Goh and Ederington, 1999). If there are fewer than 100 days in that period, the parameters are estimated using data from the combined before (-320 to -61) and after (+61 to +320) period.

The event day is specified as day 0, the period from 0 to +1 is defined as the announcement window, the period from -60 to -1 as the pre-announcement window and the period from +2 to +30 as the post-announcement window.

The abnormal returns, AR_{it}, are averaged across the N_t rating change events in the sample on each event day t to form an average abnormal return (AAR_t),

$$AAR_t = \frac{1}{N_t} \sum_{i=1}^{N_t} AR_{it} \tag{2}$$

To calculate the abnormal return for any period of k days from t to $t+k$, the average abnormal returns are cumulated over the k days from t through $t+k$, to form cumulated average abnormal returns ($CAAR$),

$$CAAR_{t,t+k} = \sum_{T=t}^{t+k} AAR_T \tag{3}$$

An estimate of the variance of this series, $\hat{\sigma}^2_{AAR}$, is calculated from the 100 days from +61 through +160 as

$$\hat{\sigma}^2_{AAR} = \frac{1}{99} \sum_{t=+61}^{+160} (AAR_t - \overline{AAR})^2 \tag{4}$$

where, $\overline{AAR}$ is the mean average abnormal return for the 100 days.

The significance of $CAAR_{t,t+k}$ is estimated using the t-test statistic

$$t = CAAR_{t,t+k} / \sqrt{k}\,\hat{\sigma}_{AAR} \tag{5}$$

which is distributed Student-t with 99 degrees of freedom if the average abnormal returns, the AAR_t, are normally distributed and independent through time.

Additionally, tests are also conducted based on standardized abnormal returns to ensure that each abnormal return will have the same variance (reducing the influence of events involving securities with high return variances).

$$SAR_{it} = \frac{AR_{it}}{\sqrt{\frac{1}{99} \sum_{t=+61}^{+160} (AR_{it} - \overline{AR}_i)^2}} \tag{6}$$

The average standardized abnormal return ($ASAR_t$) is then calculated across all N events,

$$ASAR_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} \qquad (7)$$

The significance of the average standardized abnormal returns in the announcement window is then tested via a z-test that relies on the $ASAR_t$ being asymptotically distributed as unit normal.

$$z = ASAR_t \sqrt{N} \qquad (8)$$

When the cumulative average standardized abnormal return in any period from t to $t+k$ is divided by $\sqrt{k}$, the resulting statistic is also distributed as unit normal.

To facilitate the comparison of the average abnormal returns for the contaminated and uncontaminated portfolios, as well as for the across and within class portfolios, the time series of the difference is calculated from day -60 through day +30 relative to the rating event release date. Then abnormal returns are calculated over a variety of periods, and their statistical significance is calculated using the t-statistic discussed above and the z-statistic used by Tavlos (1987).

According to Boehmer *et al*. (1991), if the variance of stock returns increases on the event date, the above tests, using the time series of non-event period data to estimate the variance of the average abnormal returns, may reject the null hypothesis too frequently. Following this reasoning, they propose that the variance of average abnormal returns is estimated from the cross-section of event date instead of estimation period prediction errors to produce appropriate rejection rates when the null is true and equally powerful tests when it is false. The test statistic is:

$$z = \frac{\frac{1}{N}\sum_{i=1}^{N} SAR_{iE}}{\sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left(SAR_{iE} - \sum_{i=1}^{N}\frac{SAR_{iE}}{N}\right)^2}} \qquad (9)$$

where, SAR_{iE} is the standardized abnormal return for each event on the event date.

In light of some evidence that abnormal returns for some banks may not be normally distributed, we also provide the results of the binomial test of proportions proposed on literature for the number of events with positive and negative abnormal returns for the various periods of interest.

4. Empirical results

4.1. Full sample downgrades and upgrades

Table 3 contrasts the abnormal returns of full sample downgrades with full sample upgrades.

The abnormal performance on day 0 and +1 is -1.23% for downgrades, which is statistically significant at the 1% level. The cross-sectional z-statistic, which control for any change in variance around the event, is -3.88 also significant at 1%. The difference between the time series and the cross-sectional z-statistics reflects an increase in variance around the rating change.

The proportion of observations with negative returns during the announcement window (0,+1) is 59.7% (194/325). The *P*-value testing whether the indicated proportion of negative returns is significantly greater than 50% is 0.001. For the pre-announcement period over day -60 to -1 we do not find evidence of substantial drift for downgrades. Further, in the case of downgrades, we do not find abnormal returns statistically significant even in the window over day -10 to -1, with downgrades taking the unexpected (positive) sign, on average. However, there is some evidence of statistically significant negative post-announcement abnormal returns over day +2 to +11. It suggests that information is incorporated into prices slowly (investors' underreaction). But then, in the window over day +12 to +30, this negative post-announcement drift and the announcement drift of -1.23% mentioned above are corrected by a positive abnormal return of 1.98% statistically significant. Therefore, for the broader post-announcement period, over the window day +2 to +30 as a whole, we do not find significant CAARs for downgrades.

Regarding to upgrades, the abnormal return on day 0 and +1 is 1.5%, which is statistically

INSERT TABLE 3 HERE

significant at the 1% level. The cross-sectional z-statistic is 2.32 significant at the 5% level. The proportion of observations with positive returns during the announcement window is 63.5% (47/74) with an associated *P*-value of 0.027. In contrast to downgrades, for the pre-announcement period over day -60 to -1 we find evidence of substantial drift for upgrades. Further, there is a statistically significant abnormal return of 3.09% at the 1% level over the day -10 to -1. This suggests that there is an overreaction prior to the announcement of the upgrade because in the post-announcement window from day +2 to +11, that reaction is corrected by a negative abnormal return of -2.16% significant at the 1% level, when investors revise their beliefs. Notice that, this correction is present in all the post-announcement window.

In previous studies, the announcement period CAAR for upgrades is not significant (e.g., Goh and Ederington, 1999). The above mentioned evidence that the announcement period CAAR for upgrades is significant is consistent with the findings of Gropp and Richards (2001). In most of the previous studies the announcement window CAAR for downgrades is negative and significant, which is consistent with our results.

In contrast to some of the previous literature but consistent with Gropp and Richards (2001), we do not find that prices react more strongly to downgrades than to upgrades, thus not confirming ideas such as: i) banks and supervisors are more reluctant to reveal negative information than positive information to the market (Schweitzer *et al*., 1992); ii) rating agencies expend more resources in detecting credit deterioration rather than improvement due to higher reputational costs of failing to detect credit problems (Jorion and Zhang, 2007); and iii) upgrades may not be as timely as downgrades (Schweitzer *et al*., 1992).

The most surprising result from the analysis of pre- and post-announcement abnormal returns is with respect to the pre-announcement period. For downgrades, most of the previous research finds significant negative pre-announcement returns, including, Schweitzer *et al*. (1992) for a sample of US bank holding companies. Taking this into account, we would expect to find significant cumulative abnormal returns of the expected sign in the 60 days before the rating announcement if rating agencies are acting in response to public information. Once, in the case of downgrades, we do not find this, but we do find significant negative returns in the announcement window, it seems plausible to conclude that there is negative news in the rating announcements that was not already public. This result is consistent with the findings of Groop and Richards (2001), which also examine a sample of European banks, and with Goh and Ederington (1993). In the case of pre-announcement of upgrades we find results consistent with Holthausen and Leftwich (1986) and Goh and Ederington (1999), which also observe significant positive abnormal returns prior to rating upgrades. These results imply that upgrades are, at least, partially predictable in that they tend to occur following periods of positive news.

4.2. Downgrades and upgrades – contaminated and uncontaminated

Table 4 presents evidence comparing the contaminated and uncontaminated announcements for the sample of downgrades (left panel) and upgrades (right panel).
In the announcement period, the contaminated sample earns -2.66%, while the uncontaminated sample earns -0.7%, both significant at the 1% level. Thus the contaminated group loses an additional 1.96%, and that difference is reliably different from zero. Cross-sectional z-statistics are -3.14 for the contaminated sample and -2.57 for the uncontaminated sample. Once again, the difference between the time series and cross-sectional z-statistics reflect an increase in variance around the rating change.

INSERT TABLE 4 HERE

None of the groups experience statistically significant negative abnormal performance in the previous 60 days. In the post-announcement window day +2 to +11 there is some evidence of negative abnormal returns in the uncontaminated sample, being -0.89%. It suggests that information is incorporated into prices slowly (investors' underreaction). But then, in the window over day +12 to +30, this negative post-announcement drift and the announcement drift of -0.7% mentioned above are corrected by a positive abnormal return of 1.41% statistically significant at the 5% level. Therefore, for the broader post-announcement period, over the window day +2 to +30 as a whole, we do not find significant CAARs for uncontaminated downgrades.

The results for the uncontaminated sample in the announcement window suggest that rating agencies provide information to the capital markets via downgrades. However, we cannot be certain that we have eliminated all contaminating announcements because the *Financial Times* may not follow some of the banks included in the sample.

The results for the contaminated sample of downgrades in the announcement window are consistent with the view of Holthausen and Leftwich (1986) by suggesting that: at a minimum, rating agencies respond quickly to negative news which is released (or which they know will be released) or; alternatively, rating agencies provide information, or they provide incentives for banks to disclose information.

Given that, in the case of uncontaminated downgrades, we do not find significant negative pre-announcement CAARs, but we find significant returns in the announcement window, it is plausible to conclude that, on average, uncontaminated downgrades are not anticipated and there is negative news in the rating announcements that was not already public.

The right panel of Table 4 presents evidence comparing the contaminated and uncontaminated announcements for the sample of upgrades. In the announcement period, the contaminated sample earns 1.08% significant at the 5% level, while the uncontaminated sample earns 1.58% significant at the 1% level. Thus the uncontaminated group earns an additional return of 0.49%, but that difference is not statistically significant. The proportion of contaminated observations with positive abnormal performance in the window day 0 to day +1 is 72.7% (8/11), whereas 61.9% (39/63) of the uncontaminated observations have positive abnormal returns, with associated *P*-values of 0.227 and 0.077, respectively.

The uncontaminated group experiences a statistically significant abnormal return of 3.67% at the 1% level over the day -10 to -1 (although they do not have a significant effect on stock prices when looking at the broader window day -60 to -1). But then, in the post-announcement window from day +2 to +11, this reaction is corrected by a significant negative abnormal return of -2.21%, when investors revise their beliefs, continuing from day +12 to +30. This suggests that there is an over-reaction to the announcement of the uncontaminated upgrade and that the announcement was partially anticipated by the market. For the broader post-announcement window, from day +2 to +30 as a whole, we find a negative CAAR of -5.27, significant at the 1% level for uncontaminated upgrades. The contaminated group of upgrades does not experience significant abnormal return either in the pre or post-announcement windows. Once again, the price response to a rating change for the uncontaminated sample may be exaggerated because of contaminating news not included in the *Financial Times*.

Applying the same reasoning as for the contaminated downgrades sample, the results for the contaminated sample of upgrades in the announcement window suggests that, at a minimum, rating agencies respond quickly to positive news which is released or, alternatively, they provide information to investors.

4.3. Downgrades and upgrades – across classes and within classes

Table 5 contrasts the abnormal returns of downgrades (upgrades) across rating classes with the abnormal returns of downgrades (upgrades) within classes.

Regarding downgrades, the abnormal return on day 0 and +1 is -1.39% for across-classes downgrades, and is -1.06% for within-classes downgrades, both significant at the 1% level. The difference in the price response between the two groups on days 0 and +1 is -0.33%, which is not significant. The *P*-values testing whether the indicated proportion of negative returns is significantly greater than 50% are 0.000 and 0.264, respectively. These results are consistent with the findings of Schweitzer *et al*. (1992) and suggest that announcements of downgrades are associated with negative and statistically significant returns, irrespective of whether the rating change is across or within rating classes.

Both subsamples do not experience significant abnormal returns over the overall window of 2 months previous to the announcement neither over the overall window of one month after the announcement window.

The right panel of Table 5 presents evidence on upgrades, again comparing changes across classes and within classes. The abnormal return on day 0 and +1 is 2.61% for upgrades across classes, and is 0.57% for upgrades within classes. The difference in the price response between the two groups on days 0 and +1 is 2.04%, which is statistically significant at the 1% level. The difference between the time series and the cross-sectional z-statistics for the across-classes upgrades reflects an increase in variance around the rating change. The proportion of observations with positive returns during the announcement window is 73.5% (25/34) and 55% (22/40) for across and within-class upgrades, with associated *P*-values of 0.009 and 0.636.

INSERT TABLE 5 HERE

For the pre-announcement period over day -60 to -1 we find evidence of substantial positive drift of 6.17%, significant at the 1% level, for across-class upgrades. What contributes to this result is the statistically significant across-class abnormal return of 6.27% over the day -10 to -1. This suggests that there is an overreaction prior to the announcement of the across-class upgrade and the announcement was partially anticipated by the market. But then, in the post-announcement window from day +2 to +11, this reaction is corrected by a significant negative abnormal return of -3.94%, when investors revise their beliefs. This correction continues from day +12 to +30 with a significant negative CAAR of -5.74%. For within-class upgrades, over day -60 to -1, the evidence we find is not only insignificant but also of unexpected (negative) sign suggesting that within-class upgrades are not anticipated by the market.

For the broader across-class post-announcement window, from day +2 to +30 as a whole, we also find a significant negative CAAR of -9.68%. This way, we conclude that, from day +2 to day +30, in the case of across-class upgrades, the pre-announcement and announcement window positive abnormal returns are corrected by the market. For the within-class upgrades we do not observe post-announcement significant abnormal returns. Therefore, the difference in the price response between the two subsample groups is significant for the pre- (day -10 to day -1) and post-announcement windows.

4.4. Full sample negative and positive rating watches

As in the rating change evidence, results are reported separately for the complete negative and positive rating watches sample, and for contaminated and uncontaminated negative rating watches (since there are not contaminated positive rating watches in our sample). This analysis is made regardless of whether the rating was revised in the direction indicated by the rating watch or affirmed, since that would imply smaller sample sizes.

The left panel in Table 6 contrasts the abnormal returns of full sample negative rating watches with full sample positive rating watches. Each group contains 211 and 20 observations, respectively.

The abnormal performance on day 0 and +1 is -0.52% for negative rating watches, which is statistically insignificant. The difference between the times series and cross-sectional *z*-statistics reflects an increase in variance around the rating watch announcement. As stated before, Boehmer *et al*. (1991) find that when an event causes even minor increases in variance, the t- and z-tests using the time series of non-event period data to estimate the variance of the average abnormal returns reject the null hypothesis of zero average abnormal return too frequently when it is true. Taking this into account, the evidence suggests insignificance of the abnormal returns in the announcement window.

INSERT TABLE 6 HERE

In contrast to what we find for the rating downgrades sample, for the pre-announcement period over day -60 to -1 we find evidence of statistically significant negative abnormal returns. Subsequent to the rating watch announcement, over day +2 to day +30, there is evidence of significant negative abnormal returns of -6.93%. This result is consistent with the view that there are negative news other than the rating agency being released on the market during the month after the negative rating watch release. Alternatively, at a minimum, it suggests that there is a lagged reaction to the announcement of the rating watch.

Regarding positive rating watch announcements, the abnormal return on day 0 and +1 takes an unexpected negative sign, but it is small and statistically insignificant. For the pre-announcement window, and similarly to the rating upgrades sample, over day -10 to -1, there is evidence of significant positive abnormal returns of 3.38%. These results suggest that, on average, positive rating watches are anticipated by investors and tend to occur following periods of good news. For the post-announcement windows, we also find evidence of statistically significant positive drift. In any case, it is hard to make conclusions or perform further tests for upgrades due to the small size of the sample.

Our results are consistent with the Boot *et al*. (2006) model in that they assume that a change in credit quality that lead to rating watches is observable to all market participants and is not privately observed by the credit rating agencies. Thus, when the rating agency puts the firm on credit watch, the market has already rationally anticipated this at the time of the news release. Their model also predicts that after the conclusion of the credit watch procedure, stock prices should react negatively to a downgrade and positively to an upgrade.

4.5. Negative rating watches – contaminated and uncontaminated

The right panel in Table 6 presents results for contaminated and uncontaminated subsamples of negative rating watches. In the announcement window, 0 to +1, abnormal returns are negative, but small and statistically insignificant either for the contaminated and uncontaminated subsample. In the case of uncontaminated negative rating watches the time series z-statistic of -5.29 is statistically significant. However, the cross-sectional z-statistic of -0.88 suggests statistical insignificance. The difference between them reflects that there is an increase in variance around the rating watch announcement.

There is no evidence of negative abnormal returns in the pre and post-announcement windows for the contaminated negative rating watches. For the uncontaminated sample there is evidence of pre-announcement abnormal return over day -60 to day -1 of -11.23%. This suggests that, on average, negative rating watches are released after periods of bad news suggesting anticipation by investors. For the post-announcement window, the uncontaminated sample yields a statistically significant abnormal return of -10.01% over day +2 to day +30. Once again, it is important to mention that we may not be certain that we have detected all contaminating news.

Our results are consistent with the findings of Hand *et al*. (1992), Boot *et al*. (2006) and, at least in part, with Holthausen and Leftwich (1986). Holthausen and Leftwich (1986) find significant negative abnormal returns prior the announcement of a negative rating watch. Hand *et a*l. (1992), considering a complete sample of uncontaminated rating watch announcements, document no price impact to indicated downgrades or upgrades for stock prices. Boot *et al*. (2006), as stated previously, predict that when the rating agency puts the firm on credit watch, the market has already anticipated this at the time of the news realization, and, only if a public signal about credit quality deterioration (improvement) and the announcement of a negative (positive) rating watch occur simultaneously we should observe a negative (positive) market reaction. They argue that rating watches can be viewed as an implicit contract between the issuer company and the rating agency where the issuer agrees to take actions to prevent the possible lowering of its credit rating.

5. Conclusion

The opinions of rating agencies are closely followed by financial markets' agents, but their role on capital markets has been strongly criticized during the recent financial crisis (Financial Crisis Inquiry Commission, 2011). Additionally, some agents put into question if these agencies led or follow market sentiment (House of Lords European Union Committee, 2011).

Our results suggest that rating agencies provide new information to capital markets through rating change announcements of EU banks' debt (either upgrades or downgrades), but do not through rating watch announcements. These results for the rating change announcements are consistent with the argument that the main role of rating changes is to enhance transparency and efficiency in capital markets by standardizing information for all investors.

In contrast to some of the previous literature, but consistent with Gropp and Richards (2001) for example, we find that, on average, stock prices of EU banks do not react more strongly to downgrades (-1.23%) than to upgrades (1.5%), thus not confirming ideas such as: (i) banks tend to reveal good news instead of bad news; ii) rating agencies expend more resources in detecting banks' credit deterioration rather than improvement, and iii) bank upgrades may not be as timely as downgrades. Our results are also consistent with Alsakka *et al*. (2015) in the sense that they also find significant negative abnormal returns for downgrades of EU banks' debt.

The most surprising result from our analysis is that bank downgrades are not associated with significant negative pre-announcement abnormal returns, which contrasts with most of the previous research. This result suggests that, on average, downgrades are not anticipated by investors. In contrast to the absence of abnormal returns in the pre-announcement window, there is some evidence of negative post-announcement drift, consistent with investors' underreaction. Regarding to upgrades, they are associated with positive pre-announcement and negative post-announcement abnormal returns, which is consistent with an overreaction pattern. In other words, large positive pre-upgrade returns seem to indicate these are the upgrades of most interest to the market instead of indicating that they are fully anticipated.

Additionally, we find that the above described reaction patterns of stock returns to rating change announcements persist even when we control for contaminating news releases. However, contaminated downgrades, on average, lead to higher negative abnormal returns than the uncontaminated. This latter result suggests that rating agencies, at minimum, respond quickly to bad news which is released, or which they know will be released, such as in Holthausen and Leftwich (1986) findings. Furthermore, the price response to a rating announcement for the uncontaminated sample may be exaggerated because of contaminating news not included in the *Financial Times*. Announcements of downgrade across rating class do not lose a significantly higher abnormal return than downgrades within rating class. In contrast to this result, on average, announcement of upgrades across rating class earn a significantly higher abnormal return than the upgrades within rating class.

Regarding the rating watches, our findings suggest that, on average, negative (positive) rating watches are released after periods of bad (good) news. In the announcement window, there is no strong evidence of significant abnormal returns. These results suggest that the change in credit quality that lead to rating watches is observable to all market participants, who, on average, anticipate the news realization and that, in contrast to the rating change sample, rating watches do not provide new information to the market.

There is much more to investigate regarding the role of rating agencies in financial markets. First, an expectations model of rating announcements applied to a larger sample could provide more powerful tests of the effect of bank ratings. Second, due to data gathering constraints, we were not able to classify observations according to the reason for the rating announcement, so we assumed that most of rating changes and rating watches in our sample were due to changes in banks' financial prospects resulting from its operating activity. Given that it is possible that other factors may differentially influence the reaction to rating announcements, it would be interesting to examine the impact of variables such as news about sovereign credit ratings and announcements related to monetary policy and financial sector policies. Third, it would be interesting to recur to a cross-sectional analysis to study the impact on the stock price reaction of bank-specific factors such as the size of the banks, their riskiness, dividend policy, efficiency, capitalisation, profitability, or the amount of government securities held by the bank. Fourth, it would be interesting to examine the impact of the recent financial crisis on the market reaction to rating announcements. Fifth, it would be good to compare our results with the reaction of non-financial firms to rating announcements. Finally, it would be nice to analyze the way CDS spreads respond to ratings.

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Table 1. Number of banks and rating changes by country

Country Name	# Banks	Events					
		Downgrades		Upgrades		Total	
		#	%	#	%	#	%
Austria*	2	10	3.1	1	1.4	11	2.8
Belgium*	3	13	4.0	5	6.8	18	4.5
Denmark	6	23	7.1	7	9.5	30	7.5
Finland*	1	1	0.3	0	0.0	1	0.3
France*	4	18	5.5	6	8.1	24	6.0
Germany*	3	16	4.9	3	4.1	19	4.8
Greece*	5	71	21.8	10	13.5	81	20.3
Ireland*	2	18	5.5	8	10.8	26	6.5
Italy*	6	39	12.0	7	9.5	46	11.5
Netherlands*	1	6	1.8	1	1.4	7	1.8
Portugal*	3	26	8.0	1	1.4	27	6.8
Spain*	7	57	17.5	14	18.9	71	17.8
Sweden	2	2	0.6	2	2.7	4	1.0
United Kingdom	5	25	7.7	9	12.2	34	8.5
Total	50	325	100.0	74	100.0	399	100.0
Of which							
Uncontaminated		239		63		302	
Contaminated		86		11		97	

* Eurozone countries

Table 2. Rating watch announcements by year

Calendar Year	Moody's/ Fitch				
	Negative		Positive		
	#	%	#	%	
2008	8	3.8	0	0.0	
2009	11	5.2	1	5.0	
2010	27	13.8	0	0.0	
2011	78	37.0	0	0.0	
2012	51	24.2	0	0.0	
2013	5	2.4	0	0.0	
2014	7	3.3	0	0.0	
2015	24	11.4	19	95.0	
Total	211	100.0	20	100.0	231
Of which					
Uncontaminated	152		20		172
Contaminated	59		0		59

Table 3. Stock price response to downgrades and upgrades– full sample

Cumulative average abnormal returns (CAARs), *t*-statistics and *z*-statistics (in parentheses), and the number of positive-negative CAARs (in square brackets) are shown for various announcement windows.

Windows (Trading days)	**Downgrades** (325 observations) CAARs (%) (t-stat.)[a], (z-stat.)[a] [+ : -]	**Upgrades** (74 observations) CAARs (%) (t-stat.)[a], (z-stat.)[a] [+ : -]
-60 to -1	-0.08 (-0.01), (0.02) [167:158]	2.68 (0.18), (2.41)** [42:32]
- 60 to - 31	-0.85 (-0.72), (-1.66)* [151:174]	0.00 (0.0), (0.58) [35:39]
- 30 to -11	0.46 (0.48), (1.34) [170:155]	-0.41 (-0.38), (0.38) [38:36]
- 10 to - 1	0.31 (0.47), (1.08) [174:151]	3.09 (4.17)***, (4.58)*** [48:26]
0 to +1	-1.23 (-5.58)***, (-7.10)***[b] [131:194]	1.50 (6.10)***, (6.65)***[c] [47:27]
+ 2 to + 11	-0.79 (-1.19), (-2.32)** [153:172]	-2.16 (-2.92)***, (-2.22)** [38:36]
+ 12 to +30	1.98 (2.13)**, (2.83)*** [177:148]	-2.68 (-2.56)**, (-0.83) [34:40]
+2 to +30	1.20 (0.19), (1.02) [171:154]	-4.84 (-0.70), (-1.92)* [34:40]

[a] *t*-statistics/ *z*-statistics: *, ** and *** designate abnormal returns which are significantly different from zero at the 10%, 5% and 1% levels, respectively.

[b] Cross sectional *z*-statistic is -3.88, significant at the 1% level.

[c] Cross sectional *z*-statistic is 2.32, significant at the 5% level.

Table 4. Stock price response to downgrades and upgrades - contaminated and uncontaminated

Cumulative average abnormal returns (CAARs), *t*-statistics and *z*-statistics (in parentheses), and the number of positive-negative CAARs (in square brackets) are shown for various announcement windows.

Windows (Trading days)	Downgrades: Contaminated (86 observations)	Downgrades: Uncontaminated (239 observations)	Downgrades: Difference	Upgrades: Contaminated (11 observations)	Upgrades: Uncontaminated (63 observations)	Upgrades: Difference
	CAARs (%) (t-stat.)[a], (z-stat.)[a] [+ : -]	CAARs (%) (t-stat.)[a], (z-stat.)[a] [+ : -]	CAARs (%) (t-stat.)[a], (z-stat.)[a]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a]
- 60 to – 1	3.33 (0.84), (1.30) [50:36]	-1.34 (-0.75), (-0.78) [117:122]	4.67 (1.08), (1.52)	1.86 (0.34), (0.93) [7:4]	2.82 (1.51), (2.22)** [35:28]	-0.96 (-0.18), (0.00)
- 60 to – 31	-1.06 (-0.38), (-0.44) [41:45]	-0.76 (-0.6), (-1.66)* [110:129]	-0.30 (-0.10), (0.48)	3.92 (1.03), (0.89) [5:6]	-0.68 (-0.52), (0.25) [30:33]	4.61 (1.21), (0.72)
- 30 to -11	3.08 (1.38), (1.96)** [48:38]	-0.54 (-0.53), (0.31) [121:118]	3.62 (1.47), (1.52)	-1.82 (-0.59), (-0.24) [4:7]	-0.17 (-0.16), (0.51) [34:29]	-1.65 (-0.53), (-0.42)
- 10 to – 1	1.31 (0.85), (1.28) [45:41]	-0.05 (-0.07), (0.52) [129:110]	1.35 (0.80), (0.83)	-0.24 (-0.11), (1.13) [8:3]	3.67 (5.03)***, (4.49)*** [40:23]	-3.91 (-1.84)*, (-0.69)
0 to +1	-2.66 (-5.17)***, (-7.44)^{***b} [37:49]	-0.7 (-2.99)***,(-3.77)^{***c} [95:144]	-1.96 (-3.48)***, (-4.44)***	1.08 (1.53), (2.47)^{**d} [8:3]	1.58 (6.49)***, (6.18)^{***e} [39:24]	-0.49 (-0.70), (-0.10)
+ 2 to + 11	-0.48 (-0.31), (-0.89) [43:43]	-0.89 (-1.27), (-2.18)** [110:129]	0.41 (0.24), (0.36)	-1.89 (-0.89, -0.14) [7:4]	-2.21 (-3.03)***, (-2.35)** [31:32]	0.32 (0.15), (0.78)
+ 12 to +30	3.75 (1.72)*, (1.87)* [49:37]	1.41 (1.43), (2.39)** [128:111]	2.34 (0.95), (0.42)	-0.52 (-0.17, -0.74) [5:6]	-3.06 (-2.97)***, (-0.59) [29:34]	2.54 (0.84), (-0.45)
+2 to +30	3.27 (1.20), (1.04) [46:40]	0.52 (0.42, 0.68) [125:114]	2.75 (0.92), (0.54)	-2.41 (-0.64, -0.67) [5:6]	-5.27 (-4.09)***, (-1.80)* [29:34]	2.86 (0.76), (0.08)

[a] *t*-statistics/ *z*-statistics: *, ** and *** designate abnormal returns which are significantly different from zero at the 10%, 5% and 1% levels, respectively.

[b] Cross sectional *z*-statistic is -3.14, significant at the 1% level; [c] Cross sectional *z*-statistic is -2.57, significant at the 5% level; [d] Cross sectional *z*-statistic is 2.12, significant at the 5% level; [e] Cross sectional *z*-statistic is 2.07, significant at the 5% level.

Table 5. Stock price response to downgrades - across and within classes

Cumulative average abnormal returns (CAARs), t-statistics and z-statistics (in parentheses), and the number of positive-negative CAARs (in square brackets) are shown for various announcement windows.

	Downgrades			Upgrades		
	Across-class (168 observations)	**Within-class** (157 observations)	**Difference**	**Across-class** (34 observations)	**Within-class** (40 observations)	**Difference**
Windows (Tradingdays)	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a]
- 60 to - 1	-0.95 (-0.36), (0.61) [90:78]	0.84 (0.32), (-0.60) [77:80]	-1.80 (-0.51), (0.86)	6.17 (2.35)**, (3.69)*** [25:9]	-0.30 (-0.13), (-0.13) [17:23]	6.47 (2.06)**, (2.79)***
- 60 to - 31	-0.96 (-0.52), (-0.58) [76:92]	-0.73 (-0.39), (-1.80)* [75:82]	-0.23 (-0.09), (0.89)	-0.45 (-0.25), (1.61) [18:16]	0.38 (0.24), (-0.70) [17:23]	-0.84 (-0.38), (1.65)*
- 30 to - 11	-0.71 (-0.47), (0.94) [86:82]	1.70 (1.13), (0.97) [84:73]	-2.41 (-1.20), (-0.05)	0.36 (0.24, 0.76) [17:17]	-1.07 (-0.82), (-0.19) [21:19]	1.43 (0.80), (0.68)
- 10 to - 1	0.72 (0.69), (1.24) [92:76]	-0.13 (-0,13), (0.28) [82:75]	0.85 (0.61), (0.67)	6.27 (6.12)***, (5.45)*** [21:13]	0.39 (0.43), (1.20) [27:13]	5.88 (4.79)***, (3.20)***
0 to +1	-1.39 (-4.00)***, (-5.91)^{***b} [60:108]	-1.06 (-3.06)***, (-4.18)^{***c} [71:86]	-0.33 (-0.71), (-1.11)	2.61 (7.64)***, (6.89)^{***d} [25:9]	0.57 (1.88)*, (2.70)^{**e} [22:18]	2.04 (4.99)***, (3.24)***
+ 2 to + 11	-0.75 (-0.72), (-1.49) [84:84]	-0.83 (-0.80), (-1.83)* [69:88]	0.08 (0.06), (0.27)	-3.94 (-3.85***, -2.24**) [17:17]	-0.65 (-0.72), (-0.95) [21:19]	-3.29 (-2.68)**, (-1.00)
+ 12 to +30	0.60 (0.41), (1.38) [91:77]	3.47 (2.36)**, (2.71)*** [86:71]	-2.87 (-1.47), (-1.04)	-5.74 (-3.96)***, (-2.09)** [12:22]	-0.08 (-0.07), (0.83) [22:18]	-5.66 (-3.17)***, (-2.15)**
+ 2 to + 30	-0.15 (-0.08), (0.26) [89:79]	2.64 (1.44), (1.20) [82:75]	-2.79 (-1.15), (-0.68)	-9.68 (-5.36)***, (-2.99)*** [14:20]	-0.73 (-0.46), (0.14) [20:20]	-8.95 (-4.13)***, (-2.29)**

[a] *t*-statistics/ *z*-statistics: *, ** and *** designate abnormal returns which are significantly different from zero at the 10%, 5% and 1% levels, respectively.
[b] Cross sectional *z*-statistic is -3.85, significant at the 1% level; [c] Cross sectional *z*-statistic is -2.02, significant at the 5% level; [d] Cross sectional *z*-statistic is 1.91, significant at the 10% level; [c] Cross sectional *z*-statistic is 2.34, significant at the 5% level.

Table 6. Stock price response to negative and positive rating watches (left panel) and to negative rating watches – contaminated or uncontaminated (right panel)

CAARs, *t*-statistics and *z*-statistics (in parentheses), and the number of positive-negative CAARs (in square brackets) are shown for various announcement windows.

	Negative (211 observations)	Positive (20 observations)	Negative rating watches: Contaminated (59 observations)	Negative rating watches: Uncontaminated (152 observations)	Negative rating watches: Difference
Windows (Trading days)	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a] [+ : -]	CAARs (%) (*t*-stat.)[a], (*z*-stat.)[a]
-60 to -1	-7.12 (-2.35)*, (-12.37)*** [106:105]	4.97 (1.28), (0.06) [8:12]	3.47 (0.72), (-0.14) [28:31]	-11.23 (-3.63)***, (-11.49)*** [78:74]	14.70 (3.19)***, (7.54)***
- 60 to - 31	-3.58 (-1.69)*, (-10.63)*** [95:116]	-1.47 (-0.54), (-2.68)*** [7:13]	2.74 (0.81), (-0.94) [27:32]	-6.03 (-2.78)***, (-11.94)*** [68:84]	8.77 (2.72)***, (5.52)***
- 30 to -11	-2.03 (-1.18), (-5.32)*** [114:97]	3.06 (1.39), (1.83)* [14:6]	0.53 (0.19), (0.19) [30:29]	-3.03 (-1.73)*, (-6.39)*** [84:68]	3.55 (1.36), (3.54)***
- 10 to – 1	-1.50 (-1.27), (-4.86)*** [112:99]	3.38 (2.23)**, (2.29)** [11:9]	0.21 (0.11), (1.05) [29:30]	-2.17 (-1.79)*, (-6.38)*** [83:69]	2.37 (1.32), (4.26)***
0 to +1	-0.52 (-1.32), (-3.81)***b [104:107]	-0.36 (-0.71), (-2.12)**c [8:12]	-0.42 (-0.67), (1.29)d [32:27]	-0.56 (-1.38), (-5.29)***e [72:80]	0.13 (0.22), (3.90)***
+ 2 to + 11	-2.10 (-1.77)*, (-7.05)** [100:111]	1.86 (1.23), (2.60)*** [14:6]	-0.87 (-0.46), (-0.24) [29:30]	-2.57 (-2.13)**, (-8.16)*** [71:81]	1.71 (0.95), (4.11)***
+ 12 to +30	-4.83 (-2.89)**, (-9.02)*** [106:105]	0.68 (0.32), (0.97) [10:10]	1.89 (0.71), (1.12) [34:25]	-7.44 (-4.36)***, (-11.33)*** [72:80]	9.33 (3.57)***, (6.95)***
+2 to +30	-6.93 (-3.32)***, (-11.23)*** [110:101]	2.55 (0.95), (2.25)** [13:7]	1.02 (0.31), (0.77) [34:25]	-10.01 (-4.70)***, (-13.71)*** [76:76]	11.04 (3.48)***, (7.90)***

[a] *t*-statistics/ *z*-statistics: *, ** and *** asterisks designate abnormal returns which are significantly different from zero at the 10%, 5% and 1% levels, respectively.
[b] Cross sectional *z*-statistic is -1.06, statistically insignificant; [c] Cross sectional *z*-statistic is -1.01, statistically insignificant; [d] Cross sectional z-statistic is -0.75, statistically insignificant; [e] Cross sectional z-statistic is -0.88, statistically insignificant.